Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Cancel claims 1 – 16

Add the following new claims

17. (new) A fuel processor comprising: (A) a reformation zone in which hydrogen/carbon-containing fuels are endothermically reformed into hydrogen; and (B) an integral burner adjacent said reformation zone providing radiant heat to said reformation zone, said burner comprising (i) an oxygen-catalyst-coated body permeable to a fuel-gas/oxygen mixture, and having a first face for admitting said fuel-gas/oxygen mixture into said body for catalytic burning therein, and a second heat-radiating face confronting and radiantly heating said reformation zone, (ii) a supply space confronting said first face and adapted to distribute said mixture substantially uniformly across said first face, (iii) an inlet to said supply space for supplying fuel gas and oxygen to said supply space, (iv) a combustion chamber interjacent said reformation zone and said second face for receiving exhaust gases exiting from said second face and flame-burning therein any unburned said mixture contained in said exhaust gases to supplement said radiant heat when an increasing demand for hydrogen exceeds the capability of said second face to radiantly heat said reformation zone quickly enough to satisfy said demand, (v) an outlet from said combustion chamber for discharging said exhaust gases from said combustion chamber, and (vi) an igniter in said combustion chamber to set said unburned mixture aflame therein when said demand exceeds said capability.

18. (new) A fuel processor according to claim 17 including a gas-permeable member between said supply space and said inlet for admitting said mixture into said supply space while preventing the propagation of any flame formed in said supply space back into said inlet.

19. (new) A fuel processor according to claim 17 wherein said outlet is located on a side of said combustion chamber so as to laterally discharge said exhaust gases from said combustion chamber.

20. (new) A fuel processor according to claim 17 wherein said inlet is located on a side of said supply space so as to laterally supplying said mixture to said supply space.

21. (new) A fuel processor comprising: (A) a reformation zone in which hydrogen/carbon-containing fuels are endothermically reformed into hydrogen, said reformation zone being defined by first and second opposing walls ; and (B) an integral radiant burner adjacent each of said opposing walls providing radiant heat to opposing sides of said reformation zone, each said burner comprising (i) an oxygen-catalyst-coated body permeable to a fuel-gas/oxygen mixture, and having a first face for admitting said fuel gas/oxygen mixture into said body for catalytic burning therein, and a second heat-radiating face confronting one of said walls, (ii) a supply space confronting said first face and adapted to distribute said mixture substantially uniformly across said first face, (iii) an inlet to said supply space for supplying fuel gas and oxygen to said supply space, (iv) a combustion chamber interjacent a said reformation zone and said second face for receiving exhaust gases exiting from said second face, and for flame-burning therein any unburned said mixture contained in said exhaust gases to supplement said radiant heat when an increasing demand for hydrogen exceeds the capability of said second face to radiantly heat said reformation zone quickly enough to satisfy said demand using only said radiant heat, (v) an outlet from said combustion chamber for discharging said exhaust gases from said combustion chamber, and (vi) an igniter in said combustion chamber to set said unburned mixture aflame therein when said demand exceeds said capability.

22. (new) A fuel processor according to claim 21 wherein said outlet is located on a side of said combustion chamber so as to laterally exhaust said exhaust gases from said combustion chamber.

23 (new) A fuel processor according to claim 21 wherein said inlet is located on a side of each said supply space so as to laterally supply said mixture to said supply space.

24. (new) A fuel processor comprising: (A) a reformation zone in which hydrogen/carbon-containing fuel is endothermically reformed into hydrogen; (B) a heating zone wherein said fuel is vaporized or superheated preparatory to reforming in said reformation zone; and (c) an integral burner adjacent each said reformation and heating zones to heat said reformation and heating zones, said burners each comprising (i) an oxidation-catalyst-coated body permeable to a fuel-gas/oxygen mixture and having a first face for admitting said mixture into said porous body and a second, heat-radiating face confronting a said reformation zone or heating zone for radiantly heating said zone, (ii) a supply space confronting said first face and adapted to distribute said mixture substantially uniformly across said first face, (iii) an inlet to said supply space for supplying said fuel and air to said supply space, (iv) a combustion chamber interjacent a said reformation or heating zone and said second face for receiving exhaust gases exiting from said second face and for flame-burning therein any unburned mixture contained in said exhaust gases to supplement said radiant heat when an increasing demand for hydrogen exceeds the capability of said second face to radiantly heat said reformation zone quickly enough to satisfy said demand using only said radiant heat, (v) an outlet from said combustion chamber for discharging said exhaust gases from said combustion chamber, and (vi) an igniter in said combustion chamber to set said unburned mixture aflame therein when said demand exceeds said capability.

25. (new) A fuel processor according to claim 24 wherein a single supply space supplies said mixture to each said oxygen-catalyst-coated body.

26. (new) A fuel processor according to claim 17 wherein said heat-radiating face is substantially rectangular and parallels said reformation zone.

27. (new) A fuel processor according to claim 17 wherein said supply space is defined by a wall that lies opposite, and at an oblique angle to, said first face so as to form a tapering supply space having one end of said wall further from said first face than the other end of

said wall, and said inlet supplies said fuel gas-oxygen mixture to said feed chamber from said one end.

28. (new) A fuel processor according to claim 27 wherein said inlet is on a side of said supply space so as to laterally supply said mixture to said supply space.

29. (new) A fuel processor according to claim 17 wherein said combustion chamber is defined by a wall that lies opposite, and at an oblique angle to, said second face so as to form a tapering combustion chamber having one end of said wall further from said second face that the other end of said wall, and said outlet discharges said exhaust gases from said combustion chamber from said one end.

30. (new) A fuel processor according to claim 29 wherein said outlet is located on a side of said combustion chamber so as to laterally discharge said exhaust gases from said combustion chamber.

31. (new) A fuel processor according to claim 29 wherein said wall defines said reformation zone.

32. (new) A fuel processor comprising: (A) a reformation zone in which hydrogen/carbon-containing fuel is endothermically reformed into hydrogen; (B) a heating zone wherein said fuel is vaporized or superheated prepatory to reforming; and (C) an integral burner adjacent each said reformation and heating zones to heat said reformation and heating zones, said burners each comprising (i) an oxidation-catalyst-coated body permeable to a fuel-gas/oxygen mixture and having a first face for admitting said mixture into said body and a second, heat-radiating face confronting a said reformation zone or heating zone for radiantly heating said zone, (ii) a supply space confronting said first face and adapted to distribute said mixture substantially uniformly across said first face, (iii) an inlet to said supply space for supplying said fuel and air to said supply space, (iv) a combustion chamber interjacent a said reformation or heating zone and said second face for receiving exhaust gases exiting from said second face and for flame-burning therein any unburned mixture contained in said exhaust gases to supplement the radiant heat provided by said

catalyst-coated body when an increasing demand for hydrogen exceeds the capability of said second face to radiantly heat said reformation zone quickly enough to satisfy said demand, (v) an outlet from said combustion chamber for discharging said exhaust gases from said combustion chamber, and (vi) an igniter in said combustion chamber to set said unburned mixture aflame therein when said demand exceeds said capability.

33. (new) A fuel processor according to claim 24 wherein each said combustion chamber is defined by a wall that lies opposite, and at an oblique angle to, a said second face, and said burners are arranged in said fuel processor such that said walls parallel each other and define a said reformation or heating zone therebetween.

34. (new) A fuel processor according to claim 24 wherein each said supply space is defined by a wall that is common to, and shared by, another adjacent supply space, which wall lies opposite, and at an oblique angle to, a said first face.

35. (new) A method of operating a fuel processor during periods of increasing hydrogen demands , said fuel processor including (A) a reformation zone for the endothermic reformation of hydrogen/carbon-containing fuels to produce hydrogen, and (B) an integral radiant burner having (i) a gas-permeable, oxygen-catalyst-coated body for catalytically burning a fuel-gas/oxygen mixture therein, said body having a first face for admitting said fuel-gas/oxygen mixture into said body, and a second heat-radiating face confronting, and radiantly heating, said reformation zone, and (ii) a combustion chamber interjacent said reformation zone and said second face for receiving exhaust gases exiting from said second face, comprising the steps of:

(1) supplying said mixture to said first face at a first flow rate that permits substantially all of said mixture to be catalytically burned within said body to radiantly heat said reformation zone enough for said zone to produce hydrogen at a first hydrogen-production rate sufficient to satisfy a first hydrogen demand;

(2) increasing the hydrogen production rate to a second hydrogen production rate that is greater than said first hydrogen production rate to satisfy increasing hydrogen demands;

(3) supplying said mixture to said first face at an increasing flow rate that is commensurate with said increasing hydrogen production rate, said increasing flow rate being such that some unburned mixture exits said second face in said exhaust gases as said hydrogen production rate transitions between said first and second hydrogen production rates; and

(3) setting said unburned mixture aflame in said combustion chamber to supplement the radiant heat provided by said body when said mixture is being supplied to said first face at said increasing flow rate.

to method and apparatus for wide-area transportation, utilization and recovery of heat utilizing methanol decomposing and synthesizing reactions. The system employs a heat generator 13 (see Fig 3). That heat generator13, however, is not a fuel-gas/oxygen-consuming burner , but rather a reactor "charged" with catalyst for synthesizing or reforming methanol (see col.5 lines 35-60 and col.6 line 10-22). The only "combustion means" disclosed by Yabe is the device numbered "8". However no structure is disclosed for that device, and accordingly it can not form the basis of a valid 35 USC 102 rejection. Suffice to say, it is not understood just what specific structure in Yabe the Examiner is relying on to support the 35 USC 102(b) rejection. Should the Examiner continue to rely on Yabe in the future, a more specific rejection would be helpful toward advancing prosecution of this application.

Regardless, the issue is now seen to be moot in view of Applicant's new claims. In this regard, Yabe does not disclose a fuel processor having a reformer zone heated by an integral catalytic/radiant burner and flame burner, as needed, to provide sufficient heat to the reformer that it can quickly respond and produce all the hydrogen that is needed during periods of increasing hydrogen demands.

Michel 4,406,611

Applicant's original claims 1-8 were rejected under 35 USC 102(b) as being anticipated by Michel 4,406,611. Michel discloses an oil burner for a hot water boiler having a catalytic region 53 where the oil is partially oxidized and gasified, and subsequently flame-burned downstream of the catalytic region 53. Catalytic region 53 is not intended to be a radiant heater, and is not seen to function as such. Though Michels does disclose some of Applicants structure, he does not disclose Applicant's "invention" as recast in the present claims. Indeed, the issue is now seen to be moot in view of Applicant's new claims, since Michel does not disclose a fuel processor having a reformation zone heated by an integral catalytic radiant/flame combination burner for providing sufficient heat to a reformer that it can quickly respond, and produce all the hydrogen that is needed, even during periods of increasing hydrogen demand.

to method and apparatus for wide-area transportation, utilization and recovery of heat utilizing methanol decomposing and synthesizing reactions. The system employs a heat generator 13 (see Fig 3). That heat generator13, however, is not a fuel-gas/oxygen-consuming burner , but rather a reactor "charged" with catalyst for synthesizing or reforming methanol (see col.5 lines 35-60 and col.6 line 10-22). The only "combustion means" disclosed by Yabe is the device numbered "8". However no structure is disclosed for that device, and accordingly it can not form the basis of a valid 35 USC 102 rejection. Suffice to say, it is not understood just what specific structure in Yabe the Examiner is relying on to support the 35 USC 102(b) rejection.Should the Examiner continue to rely on Yabe in the future, a more specific rejection would be helpful toward advancing prosecution of this application.

Regardless, the issue is now seen to be moot in view of Applicant's new claims. In this regard, Yabe does not disclose a fuel processor having a reformer zone heated by an integral catalytic/radiant burner and flame burner, as needed, to provide sufficient heat to the reformer that it can quickly respond and produce all the hydrogen that is needed during periods of increasing hydrogen demands.

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35 USC 103

Original claims 2 and 11-14 were rejected under 35 USC 103(a) over Yabe in view of Fleming, and Yabe in view of Official Notice being taken about the composition of the permeable body. These rejections are moot in view of Applicant's cancellation of claims 2 and 11-14, and the recasting of the invention in new claims 18 – 35.

TRANSLATIONS

Enclosed herewith are English language translations of JPO Publication No. 60053711 A and 59176509 A

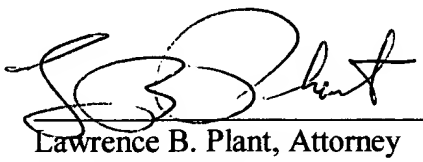
AUTHORIZATION TO CHARGE FEES TO DEPOSIT ACCOUNT

This application now contains 5 independent and 14 dependent claims. Please charge General Motors Corporation Deposit Account acct No. 07-0960 the amount of $172.00 for two (2) extra independent claims.

CONCLUSION

In view of the above amendments and remarks, this application is believed to be in condition for allowance. Applicant respectfully requests the Examiner to reconsider the application, as amended, to allow the same, and to pass it to issue at his earliest convenience.

Respectfully submitted,



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Attachments